

## 1. BOSC 2017 Nominations

### Self Nomination:

Yes

### Nominator Information

First Name

Last Name

Nominator Title

Street Address

City

State

Postal Code

Email Address

Phone Number

Mobile Phone

### Nominee Information

First Name

Lucinda

Last Name

Johnson

Nominee Title

Associate Institute Director

Street Address

Exemption 6

### Employment Information

Place of Employment/Work:

Natural Resources Research Institute

**Work Street Address**

5013 Miller Trunk Highway

**Work City**

Duluth

**Work State:**

MN

**Work Postal Code**

55811

**Work Phone Number**

218-788-2651

**Work Email Address**

ljohnson@d.umn.edu

**Sector**

Other - Write In (Required): Applied research institute at University of MN

**Qualifications****Primary Area(s) of Expertise**

Aquatic ecology, Systems ecology, Landscape ecology, watershed science, climate change,

**Committee Preference(s)**

Executive Committee

Safe and Sustainable Water Resources Subcommittee

Sustainable and Healthy Communities Subcommittee

**Statement of Interest**

The EPA Office of Research and Development is a premier science research organization with some of the best and brightest scientists in the world. I have had the privilege of collaborating with a number of individuals across the agency on amphibian malformation issues, Great Lakes coastal issues, and most recently on the development of biological criteria for surface waters. As a current member of the Ecological Processes and Effects subcommittee of the Science Advisory Board (term 2011-2017), I have had the privilege of working on a number of review panels (listed below in the qualifications statement). It would be a great privilege to serve in any capacity on the Board of Scientific Counselors to provide information, advice, and recommendations to ORD.

Decision making in today's complex world requires a systems approach based upon data and information derived from application of multiple approaches from multiple disciplines. ORD provides the underlying data and information upon which regulatory decisions are made to protect human and environmental health. They employ state of the art tools and methods to derive data and information used to decision making.

In my presidential address to the Society for Freshwater Science in 2011, I highlighted the benefits and challenges of working with multidisciplinary teams and incorporating data from multiple sources across multiple scales. While the benefits of having data from multiple approaches and scales is clear, there are still challenges associated with linking conclusions across techniques and scales. Despite the difficulty, we have no choice — there is now an expectation that scientists and the decision makers they serve consider multiple approaches for obtaining and using data in decision making, and we now have the tools and methods for analyzing and visualizing large data streams. Furthermore, decision making and advisory bodies have come to recognize the need and value of incorporating the human dimension into decision making. Although collaboration across the social science to physical science disciplines is increasing, progress has been slow; these disciplines still speak vastly different languages, use vastly different data

collection methods, and employ different analytical tools and practices.

As a systems ecologist, I have worked at the landscape scale on issues associated with land use planning, forest management, and more recently mining. Science questions within these disciplines all must at some point, incorporate small / site specific considerations that contribute to permitting and planning an activity; however, regional considerations such as the ecosystem services that are lost or gained as a consequence of a particular action must consider the landscape context and cumulative effects of human activities. I feel I can contribute significantly in the application of broad scale thinking that is necessary when addressing issues of protecting human and environmental health for the long term benefit of humanity. My academic credentials and more recent experience working closely with mining (i.e., economic geologists, mining engineers, mineralogist; forest ecologists, silviculturists, renewable energy specialists) have provided me with a fresh perspective of the value of broad scale, "on the ground" thinking. I feel this would be a great benefit to the BOSC and I would be privileged to be a part of that group.

#### **Skills/qualifications related to committee preference(s) specified**

In my presidential address to the Society for Freshwater Science in 2011, I highlighted the benefits and challenges of working with multidisciplinary teams and incorporating data from multiple sources across multiple scales. While the benefits of having data from multiple approaches and scales is clear, there are still challenges associated with linking conclusions across techniques and scales. Despite the difficulty, we have no choice — there is now an expectation that we consider multiple approaches for obtaining and using scientific data in decision making, and we now have the tools and methods for analyzing and visualizing large data streams. Furthermore, decision making and advisory bodies have come to recognize the need and value of incorporating the human dimension into decision making. Although collaboration across the social science to physical science disciplines is increasing, progress has been slow; these disciplines still speak vastly different languages, use vastly different data collection methods, and employ different analytical tools and practices.

Because universities have been slow to recognize the value of this multidimensional expertise in its traditional reward system, there is a dearth of academic professionals with such experience. Such training and experience is also generally lacking among industry professionals. Advisors to ORD must be capable of working and communicating with multiple scientific disciplines and those in the social sciences as well. Over the past two decades I have worked closely with scientists from academia and government addressing a number of environmental challenges, primarily focused on the development of data and tools to improve environmental assessment of surface waters through the development and testing of environmental indicators. I was a co-PI and then lead PI on the Great Lakes Environmental Indicators Initiative (GLEI; an EPA-funded cooperative agreement with ORD-MED) which developed and tested biological indicators for assessing health of coastal areas of the Great Lakes. Data collected throughout my career has been used in development of nutrient and biological criteria. Most recently I was a coauthor of the EPA's report on Biological Criteria for Surface Waters (Jackson, et al. 2016).

I am a classically trained aquatic ecologist with a PhD from Michigan State University's Department of Zoology. I serve on the Graduate Faculty of the University of Minnesota where I teach Landscape Ecology and Stream Ecology and supervise graduate students. My work has focused on quantifying the interactions between human activities on the land and the structure and function of aquatic ecosystems. My focus has been on using spatial analysis and remote sensing tools to quantify impacts of land use change; over the past 15 years I have also examined the role of changing climatic conditions on aquatic ecosystems. My team employs multiple approaches ranging from bench-scale experiments, to mesocosms, intensive, site-based studies, and extensive field sampling to address questions associated with the health and viability of amphibians in wetlands. This project included objectives associated with the development of ecotoxicology endpoints (Olker, et al., in review), as well as model predictions of viability of amphibians as a function of future wetland extent (Guntenspergen, et al., in progress). We also used remote sensing and spatial analysis tools to quantify anthropogenic stressors across the Great Lakes Basin (including US and CA) and linked those stressors to biological responses in the coastal areas of the Great Lakes. I collaborated closely

with ORD scientists (ORD-MED) on both of the above mentioned initiatives.

I currently serve on EPA's Science Advisory Board's Ecological Processes and Effects subcommittee (2012-2017), and in that capacity have served on multiple advisory panels including: Evaluation of Lake Erie Phosphorus Reduction Strategy (2014, 2016); Effects of Connectivity on Downstream Waters, 2013-2014 (isolated wetland section lead author); Report on the Environment, 2014; and Review of Report on Mountaintop Mining and Conductivity Benchmark, 2010. In addition, I currently serve on the International Joint Commission's Science Priority Committee (one of three advisory committees to the Commissioners). As a science leader I was elected as president of the Society for Freshwater Science (2010-2011) where I played a major role in changing the name of the society (previously North American Benthological Society) and journal and updating the governance structure of the society.

As the Associate Director at the University of Minnesota's Natural Resources Research Institute I supervise a team of scientists associated with the Water Initiative, and also oversee the integration of the two additional initiative teams associated with forestry and land, mineral. In this role I seek opportunities for establishing collaborations within and across Institute teams and elsewhere in the university. Our projects are funded by federal and state grants, as well as industry, and private sector. I have recently led the development of an initiative to fund a position for a natural resource economist within the organization.

#### **Other Relevant Information**

Although I work for a university, our research organization does not function as a traditional academic unit; rather, we receive grants and contracts from diverse public and private sources, including base funding from the State of Minnesota. As a researcher and administrator and only part-time instructor at the University I have the unstructured time to devote to BOSC meetings and issues.

#### **CV/Resume URL**

Cv to be mailed separately when I arrive back in USA, July 3, 2017.

#### **2. CV/Resume**

**Please upload your CV/ Resume.**

[Johnson\\_\\_Vita\\_March2017.doc](#)

#### **3.**

#### **BOSC Nomination**

Jun 29, 2017 19:20:12 Success: Email Sent to: tracy.tom@epa.gov

#### **4. Thank You for your Submission!**

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## Lucinda B. Johnson

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Natural Resources Research Institute  
University of Minnesota, Duluth  
5013 Miller Trunk Highway  
Duluth, MN 55811

ljohnson@d.umn.edu  
218.720.4251

### Education

*Doctor of Philosophy*, Department of Zoology, Michigan State University, 1999. "Ecological Implications of Coarse Woody Debris in Low Gradient Midwestern Streams."

*Master of Science*, Department of Entomology, State University of New York, College of Environmental Science and Forestry, 1984 "An evaluation of biological assessment of water quality using stream macroinvertebrates."

*Bachelor of Arts*, Duke University, 1976. Botany major.

### Professional Experience

*Associate Director for Land, Water and Environment, and Senior Research Associate*, Natural Resources Research Institute, 7/2015 - present.

*Graduate Faculty*, Department of Biology, University of Minnesota Duluth, 1999- present.

*Graduate Faculty*, Water Resources Science Program, University of Minnesota, 2000- present.

*Director and Sr. Research Associate, Center for Water and the Environment*, Natural Resources Research Institute, University of Minnesota Duluth. 2010 – 2016.

*Interim Director*, Natural Resources Research Institute, University of Minnesota Duluth. 6/13/13 – 4/24/14

*Interim Director and Senior Research Associate*, Center for Water and the Environment: Natural Resources Research Institute, 1/2009-1/2010

*Founding Fellow*, Institute on the Environment, University of Minnesota, January 2007-2008

*Associate Director and Sr. Research Associate*, Center for Water and the Environment: Natural Resources Research Institute, 2003 – 2010.

*Adjunct Faculty Department of Biology, University of Windsor, 2011 - 2016*

*Acting Director*, Center for Water Center for Water and the Environment: Natural Resources Research Institute, 2002-2003.

*Assistant Director*, Center for Water and the Environment: Natural Resources Research Institute. 1990 to 2002.

*Graduate Faculty*, Stream Restoration Certificate Program, University of Minnesota, 2006 - 2011.

*Research Assistant*, Department of Fisheries and Wildlife, Department of Entomology, Michigan State University, East Lansing, MI, September 1994 - 1995.

*Geographical Information System Manager*, Natural Resources Research Institute, Duluth, MN. 1987 - 1991

*Assistant Research Biologist*, Illinois Natural History Survey, Champaign, IL. 1985 – 1987

*Research Assistant, Project Coordinator*, Department of Biology, Colgate University, Hamilton, NY. 1982 - 1985. Studies on the effects of environmental parameters on growth and reproduction on biological systems.

*Instructor*, Colgate University January Term, 1985. "Human Ecology of the Southwest" at Ghost Ranch Conference Center, Abiquiu, NM. Concurrently served as *Dean of Students* and *Ecologist* at Ghost Ranch.

*Laboratory Coordinator*, Department of Biology, Colgate University, Hamilton, NY. 1980-1982.

## Grants and Contracts

(Total > \$15 million)

- Natural Resource Atlas for NE Minnesota*. State of Minnesota Mining Innovation Initiative. PI. \$556,000. July 2016 – June 2018.
- Prioritizing Future Management of North Shore Trout Streams*. Environmental and Natural Resources Trust Fund. PI with: V. Brady, W. Herb, M. Cai, J. Lenczewski. \$416,000. 7/2015 – 6/2018.
- Climatic and Anthropogenic Forcing of Landscape Connectivity in the Great Plains*. National Science Foundation, Macrosystems Biology. PI, Christopher Wright. \$2.1M. Co-PI with 12 others. (subaward \$213,020) 6/2014 – 5/2017.
- Adaptive Management of Untreated Urban Runoff: An Initial Regional Assessment of Potential Restoration Priority Areas*. PI with: G. Host, T. Brown, K. Kovalenko. \$84,968. Cooperative Agreement with USGS 9/15/15 – 9/14/16.
- Conducting a condition assessment of nearshore fish habitats in the Great Lakes Basin*. Great Lakes Fisheries Trust (through US Fish and Wildlife). University of Michigan, prime. C. Riseng PI. subcontract to UM Duluth: \$67,000. 1/2015 – 12/2016.
- Criteria for Land and Water Management to Sustain Healthy Aquatic Ecosystems in a Changing Climate*. NOAA. With W. Herb, R. Garono, K. Blann. \$260,941. 9/2014 – 8/2016.
- Integrative social and hydrologic models for enhanced resiliency of coastal communities under extreme weather events*. Minnesota Sea Grant. Co-PI with G. Host, M. Davenport. 8/30/13-8/30/15.
- Great Lakes Coastal Database and Classification Framework*. Great Lakes Fisheries Trust University of Michigan, prime. C. Riseng, PI. \$19,563 subcontract to UM Duluth. L. Johnson PI. 9/1/2011 – 12/31/2015.
- Comprehensive Stressor-Response Model to Inform Ecosystem Restorations Across the Great Lakes Basin*. \$458,290. University of Michigan Water Center. PI with 10 others. 10/2013 – 9/2015.
- Improving hydrologic predictions with LiDAR*. PI, with William Herb. Lake Superior Coastal Zone Program. 7/2013 – 12/2014. \$49,470.
- Impacts of Land Development and Climate Change on Lake Superior's North Shore Trout Habitat*. Minnesota Department of Natural Resources. PI with W. Herb. 5/2011 – 6/2012. \$79,930.
- GLIC: Implementing Great Lakes Coastal Wetland Monitoring*. EPA's Great Lakes Restoration Initiative, Subcontract from Central Michigan University. Co-PI with D. Uzarski, and 12 other cooperators. \$10 M (\$2.38 M to V. Brady at NRRI/UMD), 2010-2015.
- GLIC: GLEI-II Indicator Testing and Refinement*. EPA's Great Lakes Restoration Initiative. PI, with G. Niemi, V. Brady, G. Host, E. Reavie, R. Axler, J. Ciborowski. \$1.67 M, 2010-2013.
- Prioritizing Wetland Restoration for Water Quality and Habitat Improvement*. Minnesota Pollution Control Agency. PI, with V. Brady and T. Brown. \$250 K, 3/2011-6/2013; \$100K, 6/2013 – 6/2014.
- Managing the Nations Fish Habitat at Multiple Spatial Scales in a Rapidly Changing Climate*, Kansas Cooperative Research Unit (U.S. Geological Survey, prime.) \$2.25M total (\$268,928 to LBJ). PI: Craig Paukert, CO-PIs: L. Johnson and 11 others. 8/2009-6/2014
- Ecological Design for the St. Louis River Area of Concern*. U.S. Fish and Wildlife Service 8/1/2010 – 12/30/2011. PI with V. Brady, G. Host, G. Niemi. \$143,980. (Part of a multidisciplinary project that involves US F&WS, MN Pollution Control Agency, MN DNR, and other university scientists.)
- Minnesota's Water Resources: Impacts of Climate Change- Phase II*. Legislative and Citizen's Commission on Minnesota's Resources. \$300,000. PI, with R. Axler, R. Newman, H. Stefan, R. Skaggs, V. Card. 7/2007 – 7/2010. (Multi-disciplinary project involving MN DNR, MN Pollution Control Agency and university researchers.)
- Predicting impacts of development on Lake Superior North Shore streams using high resolution GIS spatial data*. Minnesota Sea Grant, PI with R. Axler, T. Hollenhorst, D. Breneman, \$79,000. 2/2007 – 2/2009.

*Impacts of Water Resources from Climate Change.* Legislative and Citizen's Commission on Minnesota's Resources. \$250,000. PI, with R. Axler, R. Newman, H. Stefan, R. Skaggs, V. Card. 6/2006-6/2009.

*Restoring Instream and Riparian Habitat in Lake Superior's Lester-Amity Watershed.* National Fish and Wildlife Federation (Great Lakes National Program Office, Environmental Protection Agency is prime). \$35,000. 1/2006-12/2008.

*Assessing the Condition of Great Rivers using Benthic and Planktonic Algal Indicators,* Co-PI with E. Reavie. Environmental Protection Agency. 10/2005 - 09/2010. \$840,000.

*An Integrated Habitat Classification and Map of the Lake Erie Basin.* National Fish and Wildlife Federation (Great Lakes National Program Office, Environmental Protection Agency (prime). Principal Investigator, with J. Ciborowski, S. Mackey, R. Lawson. 10/2004 – 9/2007. \$128,278.

*Assessing the condition of Lake Superior's rocky coastlines.* Co-PI, with Valerie Brady. Minnesota Sea Grant. 4/2005 – 6/2008. \$80,000 plus 2 yr RA.

*Evaluation of DNR Aquatic Vegetation Surveys: Data Summaries and Comparative Analysis.* MN Department of Natural Resources. PI, with George Host. 5/25/04 – 12/15/05. \$60,000.

*Development of a Risk Assessment Plan for Acadia National Park.* PI. U.S. Geological Survey 8/01/2004 – 7/30/2008. \$65,000.

*Effects of multiple stressors on aquatic communities.* Environmental Protection Agency, STAR Program 2003-2006. Co-PI with P. Schoff, G. Guntenspergen. \$746,433.

*Testing Indicators of Coastal Ecosystem Integrity Using Fish and Macroinvertebrates,* Environmental Protection Agency, 2001-2005. PI with C. Richards, J. Schuldt, J. Ciborowski. \$893,628. Subproject of: Development of Environmental Indicators of Condition, Integrity, and Sustainability in the Great Lakes Basin, G. Niemi, P.I. \$6,000,000.

*Protocols for Selecting Classification Systems and Reference Conditions: A Comparison of Methods.* Environmental Protection Agency. 2001-2004. Co-PI with J. Schuldt, J. Ciborowski, G. Host, C. Richards. \$747,404 (plus \$250,000 cash university match).

*Identifying the Sources of Coliform Bacteria in Coastal Ecosystems and Their Relationship to Land Use.* Minnesota Sea Grant, 2001-2003. Co-PI with R. Hicks, M. Sadowsky. \$95,460.

*Critical Elements of Brook Trout Habitat in Lake Superior.* Minnesota Sea Grant, 2001-2003. Co-PI with J. Schuldt. \$60,000, plus 2 yrs RA.

*Effects of Forest Fragmentation on Community Structure and Metapopulation Dynamics of Amphibians* Environmental Protection Agency, 1999-2002. PI, with C. Johnson. \$769,623.

*Environmental factors that influence amphibian community structure and health as indicators of ecosystem integrity.* University of Illinois (Environmental Protection Agency prime). 1997-2000. Principal Investigator. \$520,281 (Total grant \$1,299,991).

*Predicting Water and Forest Resources Health and Sustainability.* Legislative Commission on Minnesota's Resources. 1999-2001 \$300,000 Co-PI, with J. Hanowski, C. Richards, G. Host.

*Development and evaluation of multi-scale mechanistic indicators of regional landscapes.* Environmental Protection Agency. 1997-2000. \$925,000. Co-PI, with C. Richards, G. Host.

*In situ characterization of ultraviolet and visible light in Rana pipiens (leopard frog) habitats.* Environmental Protection Agency. 1998-1999. \$200,000. PI, with R. Axler.

*Lake Superior Basin Land Use Decision Support.* Minnesota Department of Natural Resources (Environmental Protection Agency prime) 1997-2000. \$525,620. Co-PI, with G. Host, C. Richards.

*Quantifying coaster brook trout habitat for evaluating potential watersheds for reintroduction.* Minnesota Sea Grant. 1998-2000. \$96,350. Co-PI, with C. Richards.

*Evaluating riparian area dynamics, management alternatives and impacts of harvest practices.* Minnesota Forest Resources Council. 1996-2000. \$106,471. Co-PI, with J. Perry, others.

*Development of ecological criteria in Midwestern watersheds.* Environmental Protection Agency. 1993-1996. \$499,702. Co-PI, with C. Richards, G. Host.

*Development of biocriteria for regional watersheds through integrated landscape and reach-scale analyses.* Environmental Protection Agency. 1991- 1993. \$248,000. Co-PI, with C. Richards, G. Host.

*Analyzing the role of forested wetlands in mitigating effects of upland forest harvest on stream water quality.* 1992-1993. North Central Forest Experiment Station. 1992-1993. \$22,808. PI, with C. Richards.

*St. Louis River database development.* Legislative Commission on Minnesota's Resources (subcontracted from Arrowhead Regional Development Corporation). 1992-1993. \$21,741. PI.

*Temperance River watershed study- Phase I.* Superior National Forest, 1991-1992. \$10,000. Co-PI, with G. Host.

*Toimi Opportunity Area Assessment.* Superior National Forest, 1991-1992. \$5,300. Co-PI, with G. Host.

*Geographic Information Systems for Spatial Analysis and Landscape Design in Natural Resource Management: A Computer Demonstration Using Black Bear.* Ottawa National Forest and North Central Forest Experiment Station, U.S. Forest Service. 1990-1991. \$3,500. Co-PI, with G. Host.

### **Teaching / Mentoring**

Post Doctoral Fellow: Catherine Johnson, 1999-2001.  
 Roger Haro (co-supervisor with Carl Richards)  
 John Hutchens (co-supervisor with Carl Richards)  
 Kirk Stueve (co-supervised with Jack Kelly, George Host)

Graduate Students Advised: Jennifer Milan, UMD Biology. M.S. Spring 2003.  
 John Sandberg, UMD Biology. M.S. Winter 2005.  
 Terri Jicha, UMD Biology. M.S. Spring 2008.  
 Jeremy Erickson, Water Resources Program, MS Fall 2009  
 Brian Black, Integrated Biological Systems, MS Completed Spring 2014  
 Jennifer Olker, Integrated Biological Systems Program, PhD, Completed Spring 2014  
 Michael Harris, Water Resources Science, M.S., expected Winter 2015.  
 Jonathan Utecht, Water Resources Science, M.S. expected Spring 2016  
 Larissa Scott, Water Resources Science program, PhD, expected Spring 2020

Graduate Student Committee:  
 Wendy Heib, Water Resources Program. M.S. 2004.  
 Yakuta Baghat, University of Windsor, Dept. Biology, M.S. 2005.  
 Seth Moore, PhD, completed 2005  
 Angela Rohweder, UMD Biology, M.S., Fall 2009.  
 Eric Merten, PhD, completed, Spring, 2009  
 LeRae Lehto, M.S. completed Summer 2011  
 Andrea Crouse, M.S. completed Spring 2013  
 Jonathan Hess, M.S. expected Spring 2016  
 Jeffrey Buckley, M.S. completed Spring 2015 (U. Windsor)  
 Edward Zlonis, PhD. Integrated Biosystems Program.  
 Kathleen Winkler, PhD, Integrated Biosystems Program

Classes Taught: Landscape Ecology (3 credits) Co-Taught with G. Host and T. Hollenhorst, Fall 2004, 2006, 2008, 2010, 2012, 2014, 2017



Landscape Ecology (2 credits) Co-Taught with G. Host. Sp. 2000.  
 Stream Ecology (5 credits) with B. Hill, D. Breneman, Fall 2010, Fall 2012, Spring 2014, Spring 2016.  
 Wetland Ecology (3 credits), Co-Taught with V. Brady, Fall 2005, 2007

#### Lectures:

2009, 2011, 2013, 2015	Wetland Ecology
2005, 2006, 2007	Scientific Writing
2002	Stream Ecology (Geomorphology, River Continuum)
2000, 2001	Conservation Biology (Amphibian Malformations)
2000, 2001, 2002, 2004	Northern Stream Ecosystems & the Angler (Stream Insects, I, II)
1999	Limnology (Introduction to Landscape Ecology)
1998	Stream Ecology (Organic Matter Processing)
	EnviroVet (Introduction to Landscape Ecology)

#### Refereed Publications

- Alahuhta, J., M. Toivanen, J. Hort, F. Ecker, **L.B. Johnson**, L. Sass, J. Heino. 2017. Species richness and taxonomic distinctness of lake macrophytes along environmental gradients in two continents. *Freshwater Biology*, 10.1111/fwb.12936, in press.
- Kovalenko, K.E., E.D. Reavie, J.D. Allan, M. Cai, S.D.P. Smith and **L.B. Johnson**. 2017. Pelagic phytoplankton community change-points across nutrient gradients and in response to invasive mussels. *Freshwater Biology* DOI: 10.1111/fwb.12873.
- Alahuhta, J., F. Ecker, **L.B. Johnson**, L. Sass, and J. Heino. 2016. A comparative analysis reveals little evidence for niche conservatism in aquatic macrophytes among four areas on two continents. *Oikos*, in press.
- Uzarski, D. G., V.J. Brady, M.J. Cooper, D.A. Wilcox, D.A. Albert, R.P. Axler, P. Bostwick, T.N. Brown, J.J.H. Ciborowski, N.P. Danz, J.P. Gathman, T.M. Gehring, G.P. Grabas, A. Garwood, R.W. Howe, **L.B. Johnson**, G.A. Lambert, A.H. Moerke, B.A. Murry, G.J. Niemi, C.J. Normant, C.R. Ruetz III, A.D. Steinman, D.C. Tozer, R. Wheeler, T.K. O'Donnell, and J.P. Schneider. Standardized Measures of Coastal Wetland Condition: Implementation at a Laurentian Great Lakes Basin-Wide Scale. *Wetlands*. (in press).
- Olker, J.H., K.E. Kovalenko, J.J.H. Ciborowski, V.J. Brady, and **L.B. Johnson** 2016. Watershed land use and local habitat: implications for habitat assessment. *Wetlands* 36:311 – 321.
- Creed, I.F., Cormier, R., Laurent, K.L., Accatino, F., Igras, J., Friedman, K.B., **Johnson, L.B.**, Crossman, J., Dillon, P.J., Trick, C.G. 2016. Call for formal integration of science and management systems to achieve sustainability of the Great Lakes. *Bioscience*. 66 (5):408-418.
- Wang, L., Riseng, C. M. Mason, L.A., Wehrly, K.E., Rutherford, E.S., McKenna, Jr, J.E., Castiglione, C., **Johnson, L. B.**, Infante, D. M., Sowa, S., Robertson, M., Schaeffer, J., Khoury, M. Gaiot, J., Hollenhorst, T., Brooks, C., M. Coscarelli. 2015. A hierarchical spatial classification and database for management, research, and policy making: the Great Lakes Aquatic Habitat Framework. *Journal of Great Lakes Research*. 102:101-117
- Rohr, J.R., D.J. Civitello, P.W. Crumrine, N.T. Halstead, A.D. Miller, A.M. Schotthoefer, C. Stenoien, **L.B. Johnson**, and V.R. Beasley. 2015. Predator diversity, intraguild predation, and indirect effects drive parasite transmission PNAS 2015, doi:10.1073/pnas.1415971112
- Smith, S.D.P.<sup>1\*</sup>, McIntyre, P.B.<sup>2</sup>, Halpern, B.S.<sup>3</sup>, Cooke, R.M.<sup>4</sup>, Marino, A.L.<sup>1§</sup>, Boyer, G.L.<sup>5</sup> Buchsbaum, A.<sup>6</sup>, Burton, G.A. Jr.<sup>7</sup>, Campbell, L.M.<sup>8†</sup>, Ciborowski, J.J.H.<sup>9</sup>, Doran, P.J.<sup>10</sup>, Infante, D.M.<sup>11</sup>, **Johnson, L.B.**<sup>12</sup>, Read, J.G.<sup>1</sup>, Rose, J.B.<sup>11</sup>, Rutherford, E.S.<sup>13</sup>, Steinman, A.D.<sup>14</sup>, and Allan, J.D.<sup>1</sup>

2015. Rating impacts in a multi-stressor world: a quantitative assessment of 50 stressors affecting the Great Lakes. *Ecological Applications* doi:10.1890/14-0366.1
- Robinson, S J, Neitzel, D F, Moen, R A, Craft, M E, Hamilton, K E, **Johnson, L B**, Mulla, D J, Munderloh, U G, Redig, PT, Smith, K E, Turner, C L Umber, J K & Pelican, K M. 2014. Disease Risk in a Dynamic Environment: The Spread of Tick-Borne Pathogens in Minnesota, USA. *EcoHealth* 12(1):152-63
- Stueve, K.M, T.P. Hollenhorst, J.R. Kelly, **L.B. Johnson**, G.E. Host. 2014. High-resolution maps of forest-urban watersheds present an opportunity for ecologists and managers. *Landscape Ecology* 30:313-323.
- Alahuhta, J., **Johnson, L.B.**, Olker, J., Heino, J. 2014. Species sorting determines variation in the community composition of common and rare macrophytes at various spatial extents. *Ecological Complexity* 20:60-68.
- Niemi, G.J., **L.B. Johnson**, R.W. Howe. 2014. Environmental indicators of land cover, land use, and landscape pattern. In: Chapter 16. Environmental indicators of land cover, land use, and landscape pattern. Chapter 16, In Armon R. and O. Hanninen (eds.) *Environmental Indicators*, Springer-Verlag (invited). Pages 265-276.
- Herb, W. R., **Johnson, L. B.**, Jacobson, P.C., and Stefan H. G. 2014. Projecting coldwater fish habitat in lakes of the glacial lakes region under changing land use and climate regimes. *Canadian Journal of Fisheries and Aquatic Sciences* 71(9):1334-1348.
- Kovalenko, K.E., V.J. Brady, J.J.H. Ciborowski, S. Ilyushkin, and **Johnson, L.B.** 2014. Functional changes in littoral macroinvertebrate communities in response to watershed-level anthropogenic stress. *PLOS ONE* DOI: 10.1371/journal.pone.0101499
- Kovalenko, K.E., Brady, V.J., Brown, T.N., Ciborowski, J.J.H., Danz, N.P., Gathman, J.P. Host, G.E., Howe, R.W., **Johnson, L.B.**, Niemi, G.J. and Reavie, E.D. 2014. Congruence of community thresholds in response to anthropogenic stressors in Great Lakes Coastal Wetlands. *Freshwater Science*, 33(3):958-971.
- Olker, J.H., **L.B. Johnson**, R.P. Axler, C.M. Johnson. 2013. Factors influencing ultraviolet radiation dose to developing frogs in northern vernal pools. *Can. J. Fish. Aq. Sci.* 70(10):1429-1437.
- Jicha, T. M., **L.B. Johnson**, B.H. Hill, C.M. Elonen, and M.S. Pearson. 2013. Spatial and temporal patterns of nitrification rates in forested floodplain wet soils of Upper Mississippi River Pool 8. *River Research and Applications*. DOI: 10.1002/rra.2663
- Allan, J.D., P.B. McIntyre, S.D.P. Smith, B.S. Halpern, G.L. Boyerd, A. Buchsbaum, G.A. Burton, Jr. L. M. Campbell, W. L. Chadderton, Jan J. H. Ciborowski, P.J. Doran, T. Eder, D. M. Infante, **L. B. Johnson**, C.A. Joseph, A.L. Marino, A. Prusevich, J.G. Read, J.B. Rose, E.S. Rutherford, S.P. Sowa, and A.D. Steinman 2012. Joint analysis of stressors and ecosystem services to enhance restoration effectiveness. *PNAS* 1213841110
- Host, G.E., T. Brown, T.P. Hollenhorst, **L.B. Johnson**, J.J.H. Ciborowski. 2011. High-resolution assessment and visualization of environmental stressors in the Lake Superior basin. *Aquatic Ecosystem Management and Health* 14(4):376-385.
- Hollenhorst, T.P., **L.B. Johnson**, J.J.H. Ciborowski. 2011. Monitoring Land Cover Change in the Lake Superior Basin. *Aquatic Ecosystem Management and Health* 14(4): 433-442.
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- Johnson, L.B., et al., Development of Environmental Indicators of Condition, Integrity, and Sustainability in the Great Lakes Basin (GLEI) Using Fish and Invertebrates. Great Lakes National Program Office. Chicago, IL, May 2004.

- Johnson, L.B., et al., Development of Environmental Indicators of Condition, Integrity, and Sustainability in the Great Lakes Basin (GLEI). Region 5 Environmental Protection Agency, Chicago, IL, July 2004.
- Johnson, L.B., et al. Developing effective and relevant indicators of condition for nearshore coastal waters of the Great Lakes. Invited seminar. Water Resources Program, University of Minnesota, Twin Cities campus. September, 2004.
- Johnson, L.B., et al. Developing indicators of condition of nearshore coastal waters of the Great Lakes. Invited seminar, Environmental Protection Agency, MidContinent Ecology Division, October 2004.
- Johnson, L.B. et. al., Developing Indicators of Aquatic Ecosystem Condition from Landscape and Biotic Data. Invited seminar, Department of Biology, UMD, November, 2004.
- Johnson, L.B., J.J.H. Ciborowski, N. Danz, G. Host, G. Niemi, R. Regal, T. Hollenhorst, T. Brown, V. Brady, J. Schuldt. Quantifying the Human Disturbance Gradient for the Coastal Great Lakes. Invited presentation, South East Water Pollution Biologists, November, 2004.
- Johnson, L.B., et al. Developing indicators of condition of nearshore coastal waters of the Great Lakes. Invited seminar, Environmental Protection Agency, Office of Water, December 2004.
- Johnson, L.B., G. J. Niemi, R. P. Axler, V. Brady, J. M. Hanowski, G. E. Host, R. W. Howe, C.A. Johnston, E. Reavie, R. R. Regal, C. Richards, J. Schuldt, D. L. Swackhamer. Identifying Reference Areas and Developing Indicators of Coastal Ecosystem Conditions in the Great Lakes. Invited presentation. Surface Water Information and Monitoring (SWIMS) Conference, Chicago, IL, February 2005.
- Johnson, L. B., D. Breneman, V. Brady, J. Ciborowski, Y. Baghat. Indicators of water quantity and quality. Invited Presentation, Sustainable Water Resources Roundtable, Ann Arbor, MI. April 5,6, 2005.
- Johnson, L. B., D. Breneman, V. Brady, G. E. Host, T. Hollenhorst, J. J. H. Ciborowski, J. Holland, J. Schuldt, C. Richards. Identifying Reference Conditions In Highly Disturbed Coastal Great Lakes Wetlands. Invited symposium, North American Benthological Society, May 2005.
- Johnson, L.B., V. Brady, Y. Bhagat, J. Ciborowski, D. Breneman, J. Schuldt, T. Hrabik. Developing Indicators Using Coastal Macroinvertebrate and Fish Assemblages in Lake Michigan and the Other Great Lakes. Invited Presentation. Lake Michigan State of the Lake Conference. December, 2005.
- Johnson, L.B., V. Brady, Y. Bhagat, J. Ciborowski, D. Breneman, J. Schuldt, T. Hrabik. Identifying Reference Sites in Great Lakes Coastal Areas. Invited presentation, EMAP- Great Rivers Reference Condition Workshop, Cincinnati, OH. January 10-12, 2006.
- Johnson, L.B. Linking Water to the Land: What have we learned in 20 years? Department of Biology, University of Minnesota Duluth, Duluth, MN, February 2006.
- Johnson, L.B. Development of Environmental Indicators of Condition, Integrity, and Sustainability In the Great Lakes Basin. Invited seminar. University of Windsor Biology Department, Windsor, Johnson, L.B., J.J.H. Ciborowski, S. Mackey, T. Hollenhorst, N. Danz, G.E. Host. Quantifying Anthropogenic Stressors in the Lake Erie Basin. Invited Presentation. Fourth Biennial Conference of the Lake Erie Millennium Network. 28 February – 2 March, 2006, Windsor, Ontario. February 3, 2006.
- Johnson, L.B. Great Lakes in a Changing Climate. Minnesota DNR Wildlife School. October 9-10, 2006.
- Johnson, L.B. Great Lakes in a Changing Climate. Minnesota DNR Parks and Recreation Annual Meeting, March 9, 2007.
- Johnson, L.B., T. Hollenhorst, N. Danz, G. Host, J. Ciborowski, C. Richards, V. Brady, G.J. Niemi. Quantifying Stress-Response Relations in Aquatic Landscapes. Minnesota Pollution Control Agency, invited seminar. June, 14, 2007.
- Johnson, L.B., G.J. Niemi, et al. The Great Lakes Environmental Indicators Project. Invited briefing to Minnesota Pollution Control Agency Department Heads in Monitoring and Assessment Division. October 17, 2007.

- Johnson, L.B. Climate change impacts in Minnesota. Minnesota Water Conference Special event on Climate change sponsored by Will Steger. October 2007.
- Johnson, L.B., T. Hollenhorst, N. Danz, G. Host, J. Ciborowski. Quantifying Threats to Midwest Glacial Lakes, Rivers and Wetlands. Glacial Lakes Partnership Annual Project meeting, Midwest Fish and Wildlife Conference, Madison, WI, December 11, 2007
- Johnson, L.B., G.R. Guntenspergen, J.H. Olker, W. C. Johnson, P. Schoff. Predicting effects of climate change on amphibians from Prairie Pothole Wetlands. Symposium. Midwest Fish and Wildlife Conference, Madison, WI, December 10, 2007.
- Johnson, L.B. Climate Change: What does it mean for Wisconsin? Presentation to Douglas County Board, January 17, 2008.
- Johnson, L.B. and R.P. Axler. Measuring Effectiveness. Keynote talk at: Workshop on Impaired Waters Effectiveness Monitoring. St. Paul, MN. February 11-12, 2008.
- Johnson, L.B., J. Pastor, G.R. Guntenspergen, J.H. Olker, W. C. Johnson, P. Schoff. Impacts of Climate Change on Northern Ecosystems. Special Symposium. Air Water Waste 2008. Bloomington, MN. February 27, 2008.
- Johnson, L.B., T. Hollenhorst, G. Host, J. Ciborowski, G. Niemi, N. Danz. Multivariate summary of loadings and watershed weightings. International Joint Commission Workshop. Nonpoint Nutrient Loadings and Nearshore Ecosystem Behavior. March 17-19, 2008. Toledo, Ohio.
- Johnson, L.B. Climate change and Minnesota's Natural Resources. Invited Presentation to Minnesota Coastal Zone Management Board. May, 2008.
- Johnson, L.B. Effects of climate change and anthropogenic stressors on amphibians. Invited seminar. University of North Carolina Greensboro, April
- Johnson, L.B. Climate change and Minnesota's aquatic ecosystems. Science Museum of Minnesota, Thursday Evening Lecture Series. Exploring Water. April 9, 2009.
- Johnson, L.B. Effects of climate change and anthropogenic stressors on amphibians. Invited seminar. J.W. Jones Ecological Research Center, Newton, GA. April, 2009.
- Johnson, L.B. Climate change and Minnesota's Aquatic Resources. Symposium. Minnesota Waters, Rochester, MN May 2009.
- Johnson, L.B. G.R. Guntenspergen, J.H. Olker, W. C. Johnson, P. Schoff. Multiscale approaches for quantifying effects of multiple stressors in aquatic communities. Symposium, North American Benthological Society Annual Meeting, May 2009. Grand Rapids, MI.
- Johnson, L.B. Adapting to climate change in Minnesota. Invited presentation to Minnesota Pollution Control Agency- Committee to evaluate Adaption to climate change in Minnesota. September 1, 2009.
- Johnson, L.B. 2009. Are climate conditions changing? How can we tell? Invited presentation, Lake Superior Binational Forum. Duluth, MN
- Johnson, L.B. 2010. Land use and land use change impacts on aquatic ecosystems. Invited presentation. MN Headwaters Council, Minnesota's Water Sustainability Framework. Minneapolis, MN March 31, 2010.
- Johnson, L.B. et al. 2010. Impacts on Minnesota's Water Resources from climate change. Symposium. North American Benthological Society, June, 2010. Santa Fe.
- Johnson, L.B. 2010. Assessing Great Lakes Basin Aquatic Ecosystems: Approaches and Tools. Workshop on Ecological Flows. Sponsored by The Nature Conservancy, November, 2010. Duluth, MN.
- Johnson, L.B. 2011. Presidential Address, North American Benthological Society. Benefits and Challenges of Using Multiple Approaches and Multiple Scales for Answering Complex Questions. May 22, 2011.

- Johnson, L.B. 2011. Ecosystem Impacts of Climate Change in Coastal Areas of the Great Lakes Basin. NOAA Workshop: Coastal Habitat Conservation in A Changing Climate: Strategies and tools for the Great Lakes Region. Ann Arbor, MI. September 12, 2011.
- Johnson, L.B. 2012. Climate change impacts on Minnesota's north shore streams and coldwater lakes. Invited seminar, Water Resources Program, University of Minnesota, St. Paul, MN November, 2012.
- Johnson, L.B. 2012. Climate change impacts on Minnesota's north shore streams and coldwater lakes. Invited seminar, University of Minnesota Duluth, Duluth, MN November, 2012.
- Johnson, L.B. 2013. Great Lakes Environmental Indicators and Great Lakes Environmental Assessment and Mapping: Updates on Two Projects. Environmental Protection Agency, Duluth, MN April 2013.
- Johnson, L.B. 2013. "Identifying and calibrating indicators for Great Lakes Coastal Ecosystems". Invited seminar, University of Western Ontario, London Ontario. October 11, 2013.
- Johnson, L.B. 2013. Impacts of climate change on water quality and aquatic life: what are we seeing and what can we do about it" Invited presentation special conference: Preparing Minnesota for Climate Change: A Conference on Climate Adaptation, November 2013.
- Johnson, L.B. 2013. "Identifying and calibrating indicators for Great Lakes Coastal Ecosystems". Chinese Research Academy of Environmental Sciences. November 14, 2013.
- Johnson, L.B. 2013. "Identifying and calibrating indicators for Great Lakes Coastal Ecosystems" invited seminar at Beijing University for Civil Engineering and Architecture, Beijing, China. November 15, 2013.
- Johnson, L.B. 2014. "Climate change and Minnesota's aquatic resources: what is happening and what can we do?" MN DNR Fisheries Academy 2014. Plenary.
- Johnson, L.B. 2015. Lessons Learned: Developing indicators for Great Lakes Coastal Ecosystems 2001-2015. Invited seminar. Water Resources seminar. University of MN Duluth. Nov. 2015.
- Johnson, L.B., et al. 2015. Great Lakes Environmental Indicators Initiative 2001-2015. Lake Superior Work Group. November 13, 2015.

#### **Invited Workshops/Panels**

- 2014 Canadian Network for Aquatic Ecosystem Services- II. Montreal, CA. April 30 – May 2, 2014.
- 2014 Great Lakes Futures Project. An Action Plan for Sustainability.
- 2014 International Joint Commission, Development of Performance Indicators. January 2014, Windsor, Ontario.
- 2013 Canadian Network for Aquatic Ecosystem Services. Sudbury, Ontario.
- 2013 Johnson, L.B. Impacts of Climate change on Aquatic resources. At: Preparing Minnesota for Climate Change: A conference on Climate Adaptation, November 7, 2013. Science Museum of Minnesota.
- 2013 Johnson, L.B., W. Herb, M. C. 2013. Unraveling climate and land use impacts on coldwater fish habitats in Minnesota's lakes and north shore streams. "Recent and Projected Land use Changes in Minnesota: A briefing for Minnesota's Department of Natural Resources Program Directors and Commissioners. May 27, 2013, Fort Snelling State Park.
- 2012 Johnson, L.B. 2012. Great Lakes Environmental Indicators. A review of indicator development efforts. International Joint Commission Workshop on Indicator Development for reporting on Great Lakes Water Quality Agreement. September 4-5, 2012, Windsor, Ontario.
- 2011 Steering Committee: NOAA Workshop: Coastal Habitat Conservation in A Changing Climate: Strategies and tools for the Great Lakes Region. Ann Arbor, MI. September 12-14, 2011.
- 2010 GLEAM (Great Lakes Environmental Assessment Map), University of Michigan, 2010 thru present.

- 2009 Lessard Outdoor Heritage Council Strategic Plan, Grand Rapids, MN, August 2009.
- 2009 International Joint Commission Upper Great Lakes Water Level Study, Ecological Effects Peer Review Panel, Detroit, MN, July 22, 2009.
- 2009 Environmental Protection Agency. Planning for Lake Superior's Intensive Year Sampling, Duluth, MN, May 2009.
- 2009 Groundwater Sustainability, Part II. Freshwater Society & Water Resources Center, St. Paul, MN. May 12, 2009
- 2009 The Nature Conservancy Modeling Climate Change Impacts in Forest Ecosystems. Natural Resources, Research Institute, Duluth, MN, April 21, 2009.
- 2009 International Joint Commission, Upper Great Lakes Modeling workshop, Detroit, MI, April 3, 2009.
- 2008 International Joint Commission, Nonpoint Nutrient Loadings and Nearshore Ecosystem Behavior. March 17-19, 2008. Toledo, Ohio.
- 2008 Groundwater Sustainability Workshop I. Freshwater Society & Water Resources Center, ST. Paul, MN November 11, 2008.
- 2007 Glacial Lakes Partnership. Madison, WI, December 11, 2007
- 2005 National Science Foundation Review Panel, Field Station and Marine Lab Facilities.
- 2005 Human Disturbance Gradient, Tiered Aquatic Life, Washington, DC, March 14-15.
- 2004 Bayesian Beliefs Network- Domain Expert for Sediment Impacts on Stream Ecosystems, December 13-15, 2004, Washington D.C. Sponsored by National Center for Ecological Research, Environmental Protection Agency.
- 2004 Human Disturbance Gradient, Tiered Aquatic Life, Region 3 EPA, November 2-4.
- 2004 External review of the SOLEC Indicators. Detroit, MI, January 27-28, 2004.
- 2002 Workshop on Scaling and Uncertainty, Tempe Arizona, October 17-19.
- Lake Erie Millennium Plan, Habitat Classification Workshop Planning. Windsor, Ontario. June 16-17.
- 2001 Workshop on Bioassessment. Kellogg Biological Center, MI. November.
- 1997 Evaluating the Increase of Amphibian Malformations. Rapporteur. U.S. Environmental Protection Agency, Shenandoah National Park, April 15-16.
- 1997 National Wildlife Health Center, Amphibian Deformities: Strategic Planning Workshop, Madison, WI. March 13, 14.
- 1996 U.S. Environmental Protection Agency Workshop on Central North American Amphibian Deformities, Duluth, MN. September 25-26.
- 1994 Workshop on Ecosystem Management Strategies for the Lake Superior Region, Duluth, MN. May.
- 1993 Technical Workshop on EMAP indicators for Great Lakes Coastal Wetlands, Duluth, MN. November.
- 1993 Development of Biological Criteria for Wetlands- EMAP Program. Environmental Protection Agency. Duluth, MN. December 10-12.

#### **Workshops Conducted:**

- 1992 Use of GIS and Remote Sensing for Wildlife Habitat Assessment, Co-Organizer. MN GIS/LIS Conference.
- 1990 Co-Instructor: Workshop on geographic information systems: basic concepts and applications. Fifty-second Midwest Fish and Wildlife Conference.
- 1990 Introduction to ARC/INFO, (one week class), UM Twin Cities, Department of EEB & UMD. July, September.
- 1990 Introduction to ARC/INFO, December 17-19. Brainerd, MN.

1989 Introduction to ARC/INFO (one week class), UM, Twin Cities, Department of EEB, October, December.

### **Professional Service / Appointments**

Chair, Joint Aquatic Sciences Meeting, Portland, Oregon, May 18 – 23, 2014.  
International Joint Commission Science Advisory Board, Science Policy Committee. 2014 – 2017.  
U.S. Environmental Protection Agency, Science Advisory Panel: Evaluation of the Lake Erie Phosphorus Reduction Plan, December 2014, June 2016.  
U.S. Environmental Protection Agency, Science Advisory Panel: Effects of Connectivity on Downstream Waters, December 2013- September 2014.  
U.S. Environmental Protection Agency, Science Advisory Panel: Report on the Environment. July- December 2014.  
U.S. Environmental Protection Agency, Science Advisory Panel: Mountaintop Mining and Conductivity Benchmark, June –October 2010.  
U.S. Environmental Protection Agency, Science Advisory Board Subcommittee on Ecological Processes and Effects. October 1, 2011 – September 30, 2014.  
Canadian Network for Aquatic Ecosystem Services (CNAES). Science Committee. 2013-2018.  
Management Council, Cooperative Institute for Limnology and Ecosystem Research, University of Michigan, June 2011 – May 2014.  
UPM Blandin, Technical Advisory Committee, 2011 to present.  
President, Society for Freshwater Science (formerly: North American Benthological Society), 2010-2011  
U.S. F&WS, Great Lakes Fish Habitat Assessment Technical Advisory Committee, 2010-present.  
President, Association of Ecosystem Research Centers, 2008-2010.  
NEON Domain Science and Education Coordinating Committee (Domain 5)  
Technical Advisory Committee, Healing Our Waters Great Lakes Coalition, 2009- present  
Editorial Board, Landscape Ecology, 2003-present.  
Advisor to Minnesota Pollution Control Agency on climate change issues 2004 to present  
International Joint Commission Upper Great Lakes Water Level Study, Environmental Effects, 2008 - 2009  
Secretary, Society for Freshwater Science (formerly: North American Benthological Society) 2002 - 2008.  
Reviewer, EPA: Causal Analysis Diagnosis Information System, 2007.  
Tiered Aquatic Life Uses (Disturbance Gradient) Technical Team, Environmental Protection Agency, Office of Water, Biocriteria Division, 2005-present.  
National Science Foundation Marine Lab and Field Station Panel, July 2005.  
Riparian Science Technical Team, State of Minnesota, 2004 to present.  
Ad Hoc Journal Reviewer:  
American Fisheries Society  
ASTM Special Publications  
BioScience  
Canadian Journal of Fisheries and Aquatic Sciences  
Conservation Biology  
Ecological Society of America  
Environmental Management  
Freshwater Biology  
Freshwater Science  
Journal of Environmental Quality  
Transactions of the American Fisheries Society  
Wetlands

Ad Hoc Proposal Reviewer:

Minnesota Water Resources Program  
National Science Foundation  
Natural Environment Research Council (United Kingdom)  
National Science and Engineering Research Council of Canada  
US EPA STAR  
USDA- National Research Initiative

Curriculum Committee, Water Resources Graduate Program, 2000 to 2004.

Admissions Committee, Water Resources Graduate Program, 2004 to 2009.

Executive Committee, Water Resources Graduate Program, 2010-present

University Committees:

University Strategic Planning and Budget Committee, 2013 - 2016  
Search Committee, Natural Resources Research Institute Director, 2013.  
Search Committee, Large Lakes Observatory, Chemical Limnologist 2012  
Provost's Committee "Evaluating the Institute of the Environment" 2006  
College of Science & Engineering- Development of the Data Visualization Center- 1998  
Department of Biology, UMD- Ecologist 1998  
Department of Biology, UMD- Insect Ecologist 1999  
Department of Biology, UMD- Plant Morphologist 1997  
Department of Biology, UMD- Post-Doctoral Associate, 2001  
NRRI - Research Associate (multiple) - 2000  
NRRI- Database coordinator - 2000  
NRRI- Remote Sensing Specialist - 2000  
NRRI- Principal Administrative Specialist - 2002

### **Professional Affiliations**

Association for the Sciences of Limnology and Oceanography

American Women in Science

Ecological Society of America

International Association of Landscape Ecologists

International Society of Limnology

Society for Freshwater Science - Secretary 2002 to 2005, President, 2010-2011.

Sigma Xi - Chapter Vice President and President 1989-91

### **Special Training**

BMDP Advanced Data Analysis Workshop, May 1985.

Remote Sensing Workshop, CALMIT, University of Nebraska, Lincoln, May 1988.

ARC/INFO, April 1989.

Scan Data Capture, GIS/LIS, Orlando, 1989.

Geostatistics, June 24 - 29, 1994.

### **Other Professional Service / Activities**

Program Committee, Society of Conservation Biology, Duluth, MN 2003.  
 Local Arrangements Committee, Society of Conservation Biology, Duluth, MN, 2003.  
 Local Arrangements Committee, North American Benthological Society, Duluth, MN 1999.  
 Plenary speaker, Nordic Benthological Meeting, September 9-12, 1999. Jyväskylä, Finland.  
 Facilitator- *Treasures Under Pressure- The Future of Northeastern Minnesota Lakes*, Grand Rapids, MN.  
 September 1998.  
 Co-editor with J.D. Allan, "Advances in Catchment-Scale Analyses of Aquatic Ecosystems". Special  
 Issue *Freshwater Biology* 37(1). 1997.  
 Co-Organizer, Plenary Session and Special Symposium, "Landscape Influences on Watersheds", North  
 American Benthological Society, May 1995.  
 Co-Chair, International Association of Landscape Ecology conference, Minneapolis, MN, 1995.  
 Co-Organizer Special Symposium "Use of GIS and Remote Sensing in Aquatic Research Application",  
 North American Benthological Society, 1992.  
 Minnesota GIS/LIS Steering Committee 1988-1994.  
 Technical Advisory Committee, St. Louis River Board, 1992-1994.  
 Vice President and President, Sigma Xi Chapter at the University of Minnesota, Duluth, 1990-1991.  
 Co-Chair, 52nd Midwest Fish and Wildlife Conference, GIS Workshop, December 1990.  
 Planning Committee and Moderator, "Minnesota GIS/LIS - Growth Through Cooperation" 1990  
 Conference.  
 North Shore Management Board Technical Advisory Committee, 1987-1989.  
 Co-Organizer Special Symposium "Spatial and Temporal Analysis Using Geographical Information  
 Systems", Ecological Society of America, 1988.  
 Member, Madison County Environmental Management Council and Environmental Advisory Committee,  
 1985.  
 Instructor, Colgate University Computer Center, 1984, 1985. Workshops on BMDP and RS-1 for research  
 applications.